Amendments to the Claims:

Please cancel claims 1-17, 21-24, 28-31, 33-36, 42-43, 54, 60, 63, 68 and 70, amend claims 18-19, 27, 32, 37-40, 50, 52, 55-59, 64 and 72, and add new claims 73-77. This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-17. (Canceled)

18. (Withdrawn—Currently Amended) A method for detecting ~~a disease or condition~~ skin cancer, the method including the steps of:

a) ~~using the probe of claim 1 to distinguish~~ contacting a sample with an antibody that specifically binds an epitope sequence of a $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1, where the antibody distinguishes between functional $P2X_7$ receptors and non-functional $P2X_7$ receptors,

b) providing a receptor expression profile, and

c) comparing the receptor expression profile with that of a normal profile.

19. (Withdrawn—Currently Amended) The method of claim 18, wherein the receptor expression profile is a proportion of non-functional $P2X_7$ receptors to total $P2X_7$ receptors, and a higher proportion of non-functional receptors to total $P2X_7$ receptors in the receptor expression profile relative to the normal profile indicates presence of ~~the disease or condition~~ skin cancer.

20. (Withdrawn) The method of claim 18, wherein the receptor expression profile is that of non-functional receptors.

21-24. (Canceled)

25. (Withdrawn) The method of claim 18, wherein the receptor expression profile is provided using *in situ* imaging techniques.

26. (Withdrawn) The method of claim 18, wherein the receptor expression profile is provided using microscopy, confocal microscopy or fluorescence activated cell sorting.

27. (Withdrawn—Currently Amended) An isolated cell or tissue sample complexed with the ~~probe~~ antibody of claim **[[1]] 32**.

28-31. (Canceled)

32. (Currently Amended) An isolated antibody for detection of a ~~disease or condition~~ skin cancer, wherein the antibody specifically binds an epitope sequence of a $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1, and wherein the antibody ~~being adapted to~~ distinguishes between functional $P2X_7$ receptors and non-functional $P2X_7$ receptors ~~and to bind only to non-functional receptors~~.

33-36. (Canceled)

37. (Currently Amended) The antibody of claim 32, ~~which~~ wherein the antibody is selected from the group consisting of a polyclonal antibody, a monoclonal antibody, a recombinant antibody, a humanized or a human antibody ~~or~~ and an ~~appropriate~~ antigen binding fragment ~~thereof~~ of each antibody type.

38. (Currently Amended) The antibody of claim 32, wherein the receptors are mammalian $P2X_7$ receptors and the antibody ~~is adapted to~~ distinguishes between functional receptors having a sequence in which proline at amino acid 210 of SEQ ID NO:1 is in the trans conformation and non-functional receptors having a sequence in which the proline at amino acid 210 of SEQ ID NO:1 is in the cis conformation.

39. (Currently Amended) The antibody of claim 38, which is raised against an epitope sequence of the $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1.

40. (Currently Amended) The antibody of claim 39, which is raised against an epitope sequence of the $P2X_7$ receptor extending from Gly200 to Thr215 of SEQ ID NO:1.

41. (Withdrawn) The antibody of claim 32, wherein the receptors are mammalian $P2X_7$ receptors and the antibody is adapted to distinguish between functional receptors having a sequence in which proline at amino acid 199 is in the trans conformation and non-functional receptors having a sequence in which the proline at amino acid 199 is in the cis conformation

42-43. (Canceled)

44. (Withdrawn) An epitope adapted to cause the generation of the antibody of claim 32.

45. (Withdrawn) The epitope of claim 44, which is attached to diphtheria toxin via the C-terminal Cys residue by means of the chemical cross-linker maleimidocaproyl-N-hydroxysuccinimide (MCS), so that the conformation adopted by the attached epitope peptide occupies a stable cis proline configuration.

46. (Withdrawn) An isolated polypeptide comprising a segment of a $P2X_7$ receptor of up to 30 amino acids including Gly200 to Cys216.

47. (Withdrawn) The isolated polypeptide of claim 46, wherein the segment consists of Gly200 to Cys216.

48. (Withdrawn) An isolated polypeptide comprising a segment of a $P2X_7$ receptor of up to 30 contiguous amino acids including Gly200 to Thr 215.

49. (Withdrawn) The isolated polypeptide of claim 48, consisting of Gly200 to Thr215.

50. (Currently Amended) A pharmaceutical composition for treatment or prevention of ~~a disease or condition~~ skin cancer in a patient, the composition including a pharmaceutically effective amount of an antibody as claimed in claim 32, ~~or an epitope to cause the generation of such an amount,~~ capable of regulating programmed cell death of cells having expressed on their surface ~~aberrant or~~ non-functional $P2X_7$ receptors.

51. (Withdrawn) A preparation for treatment or prevention of a disease or condition in a patient, the preparation including one or more substances adapted to regulate the expression of ATPases or ATPDases that control the supply of ATP to $P2X_7$ receptors in the patient's cells or tissues.

52. (Withdrawn—Currently Amended) A method of treating, diagnosing or preventing ~~a disease or condition~~ skin cancer in a patient, the method including the step of administering to the patient a preparation comprising ~~the probe of claim 1~~ an antibody that specifically binds an epitope sequence of a $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1, wherein the antibody distinguishes between functional $P2X_7$ receptors and non-functional $P2X_7$ receptors.

53. (Withdrawn) The preparation of claim 51, wherein the disease or condition is chosen from the group consisting of: prostate, breast, skin, lung, cervix, uterus, stomach, oesophagus, bladder, colon and vaginal cancers, other epithelial cell cancers, malignant lymphoma, other blood cancers, irritable bowel syndrome and infection by a virus or other pathological organism.

54. (Canceled)

55. (Currently Amended) The antibody of claim 32, wherein the antibody is selected from the group consisting of a chimeric antibody, humanized or human antibody ~~or fragment thereof~~ and an antigen binding fragment of each antibody type.

56. (Currently Amended) The antibody of claim 55, ~~when combined with~~ wherein a radiolabel is attached to the antibody suitable for detection by use of scanning technology.

57. (Currently Amended) The antibody of claim 56, ~~when~~ wherein the scanning technology is positron emission tomography.

58. (Currently Amended) The antibody of claim 55, ~~when combined with~~ wherein a fluorescent label is attached to the antibody suitable for use in flow cytometry.

59. (Currently Amended) The antibody of claim 55, ~~when combined with~~ wherein a matrix is attached to the antibody suitable for colorimetric assay.

60. (Canceled)

61. (Original) A test kit for detecting non-functional $P2X_7$ receptors, the kit including the antibody of claim 32, together with a normal $P2X_7$ receptor expression profile.

62. (Previously Presented) A test kit for detecting non-functional $P2X_7$ receptors, the kit including the antibody of claim 55, together with a normal $P2X_7$ receptor expression profile.

63. (Canceled)

64. (Currently Amended) A diagnostic kit comprising:(1) ~~a probe~~ an antibody ~~that~~ that specifically binds to an epitope within residues Gly200 to Cys216 of a $P2X_7$ receptor of SEQ ID NO:1 without specifically binding to other regions of the $P2X_7$ receptor, and (2) ~~a probe~~

an antibody that specifically binds an epitope outside residues Gly200 to Cys216 of a $P2X_7$ receptor of SEQ ID NO:1 without specifically binding to an epitope Gly200 to Cys216 of the $P2X_7$ receptor.

65. (Withdrawn) The preparation of claim 51, in which the ATPases and ATPDases are chosen from CD39 and CD73.

66. (Withdrawn) The preparation of claim 51, wherein the one or more substances is one or more ATP analogues.

67. (Withdrawn) A method of treating or preventing a disease or condition, the method including use of the antibody claimed in claim 32.

68. (Canceled)

69. (Withdrawn) A method of treating or preventing a disease or condition, the method including use of the pharmaceutical composition of claim 50.

70. (Canceled)

71. (Withdrawn) The probe of claim 16, wherein the epitope is Val65-Lys81.

72. (Currently Amended) An isolated antibody that specifically binds an epitope sequence of the $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1, wherein the antibody ~~is adapted to~~ distinguishes between functional $P2X_7$ receptors and non-functional $P2X_7$ receptors, and wherein proline at amino acid 210 is in the cis conformation.

73. (New) An isolated antibody for detection of a skin cancer, wherein the antibody specifically binds an epitope sequence of a $P2X_7$ receptor extending from Gly200 to Thr215 of SEQ ID NO:1, and wherein the antibody distinguishes between functional $P2X_7$ receptors and non-functional $P2X_7$ receptors.

74. (New) The method of claim 18, wherein the skin cancer is selected from the group consisting of basal cell carcinoma (BCC), squamous cell carcinoma (SCC), malignant melanoma and dysplastic naevi.

75. (New) The antibody of claim 32, wherein the skin cancer is selected from the group consisting of basal cell carcinoma (BCC), squamous cell carcinoma (SCC), malignant melanoma and dysplastic naevi.

76. (New) The pharmaceutical composition of claim 50, wherein the skin cancer is selected from the group consisting of basal cell carcinoma (BCC), squamous cell carcinoma (SCC), malignant melanoma and dysplastic naevi.

77. (New) The method of claim 52, wherein the skin cancer is selected from the group consisting of basal cell carcinoma (BCC), squamous cell carcinoma (SCC), malignant melanoma and dysplastic naevi.